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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,382	09/26/2003	Gunnar Lagerstrom	00173.0040.PCUS00	2381
28694	7590	05/03/2005	EXAMINER	
NOVAK DRUCE & QUIGG, LLP 1300 EYE STREET NW SUITE 400 EAST WASHINGTON, DC 20005			FLANIGAN, ALLEN J	
			ART UNIT	PAPER NUMBER
			3753	

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/605,382	<b>Applicant(s)</b> LAGERSTROM ET AL.	
	<b>Examiner</b> Allen J. Flanigan	<b>Art Unit</b> 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.135(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.  
     4a) Of the above claim(s) 18-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 17 is/are rejected.
- 7) ☒ Claim(s) 6-16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

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|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/24/08</u> → <u>3/3/09</u> | 6) <input type="checkbox"/> Other: ____  |

Claims 18-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 3/18/2005.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mathur et al. in view of Nicholson and De Lepeleire.

Mathur et al. shows a welded plate heat exchanger construction in which cells are formed between adjacent pairs of plates. Edges are sealed to guide flow in the spaces between plates either by the use of spacers 66, 68 or by bending the edges and welding (see Figs. 3-5 of Mathur et al., for example). Nicholson shows that it is known to employ spacers exclusively to space apart adjacent plates while providing appropriately located inlet and outlet openings along the sides of the stack for the interdigitated fluid passages (see elongated spacers 10 and L shaped spacers 11 shown in Fig. 1). Further, De Lepeleire shows that the prior art expressly recognizes the equivalence of these two methods of sealing the margins of plates in stacked plate heat exchangers (see lines 3-13 of column 3, Figs. 4-6a). In view of this, it would have been an

obvious substitution of known equivalents to employ the spacer/closure bars taught in Nicholson in place of the bent/flanged edges 50, 52 of Mathur et al. The above-effected combination of teachings would meet the limitations of claim 1.

As for claim 17, it is believed that a seam produced by laser welding would be structurally indistinguishable<sup>1</sup> from one produced by resistance welding as discussed in Mathur et al. (see seam 58). Even assuming *arguendo* that this is not the case, the Examiner hereby takes Official Notice that the use of laser welding to assemble metallic elements such as plate heat exchangers is of such notorious character that citation of a reference is considered unnecessary. ***In re Malcolm*, 54 U.S.P.Q. 235.**

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mathur et al. in view of Nicholson and De Lepeleire as applied to claim 1 above, and further in view of Johnson.

It is known in the art of heat exchange in general, and plate heat exchangers in particular, to provide for the change in volume of fluids exchanging heat by varying flow areas of passages. Johnson, for example, shows a stacked plate exchanger similar to Mathur et al. designed to handle a liquid (ammonia) that evaporates in the exchanger, thus increasing in volume. To accommodate this, they provide outlet manifold and openings that are larger

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<sup>1</sup> PRODUCT-BY-PROCESS CLAIMS ARE NOT LIMITED TO THE MANIPULATIONS OF THE RECITED STEPS, ONLY THE STRUCTURE IMPLIED BY THE STEPS – see MPEP 2113

than the inlets for the ammonia (see Figs. 3 and 5). Thus, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to vary the size of the inlet and outlet openings in Mathur et al. to allow for such variations in volume of a fluid being heated.

Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mathur et al. in view of Nicholson, De Lepeleire, and Johnson as applied to claim 2 above, and further in view of Prat (US 1,409,967).

Nicholson teaches the use of protrusions 12 formed in the corrugated plate for "supporting the margins of the plates at the inlet and outlet openings (bottom of column 3). An alternate method of achieving such support is taught in Prat, which discloses the use of spiral or corrugated strips attached to the terminal ends of spacer bars to perform support of the plates where the spacer is omitted to permit ingress or egress of fluid. Thus, it would have been an obvious substitution of equivalents to use such corrugated or "pleated" strips attached to the ends of spacers 10, 11 in place of the projections 12 of Nicholson.

Claims 6-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

lio et al. and Hodson et al. show plural inlet and outlet arrangements similar to those of the Fig. 10 elected embodiment. The remaining references show edge sealing features in stacked plate heat exchangers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (571) 272-4910. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Mancene can be reached on (571) 272-4930. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Allen J. Flanigan  
Primary Examiner  
Art Unit 3753